



UNITED STATES PATENT AND TRADEMARK OFFICE

cm

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,865	01/31/2006	Lip Teck Soh	003D.0086.U1(US)	2241

29683 7590 04/02/2007
HARRINGTON & SMITH, PC
4 RESEARCH DRIVE
SHELTON, CT 06484-6212

EXAMINER

NGUYEN, PHUONGCHI T

ART UNIT	PAPER NUMBER
----------	--------------

2833

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/566,865	Applicant(s) SOH, LIP TECK	
	Examiner Phuongchi Nguyen	Art Unit 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. Applicant's amendment of December 18, 2006 is acknowledged. It is noted that claim 1, 10 are amended.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 5-9, 11-23, 25-26, 28-29, 31-34, 36-39 and 41-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Grabbe (US4268102).

In regards to claim 1, Grabbe discloses an electrical connector comprising:

a connector housing (18')(figs. 4 and 5); and

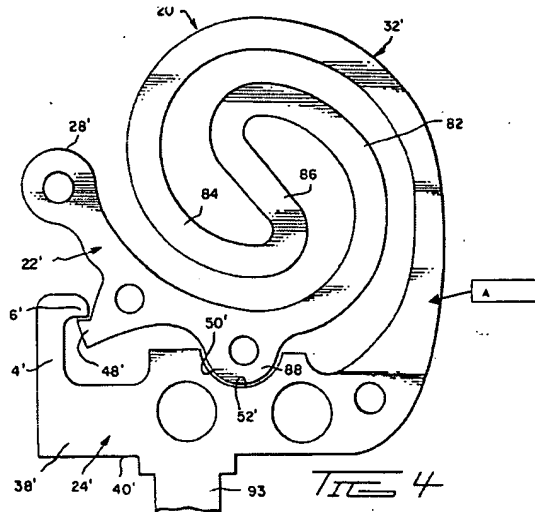
at least one deformable connector terminal arrangement (of 20') disposed at the connector housing (18'), the connector terminal arrangement (of 20') comprising:

a terminal (20') comprising a movable resilient arm portion (32'+82+84+86), a contact portion (28') at one end of the resilient arm portion (32'+82+84+86) for connecting to a first electrical point (2) (fig. 1) and a support portion (24') connected to another end of the resilient arm portion (32'+82+84+86) and for connecting to a second electrical point (4, 96);

wherein the support portion (24') is seated in the connector housing (18'), and wherein the terminal (20') further comprises a contact tail portion (93) extending from the support portion (24') out of the housing (18');

a first pivot portion (A) for pivoting of the resilient arm portion (32'+82+84+86) relative to the support portion (24'); and

a second pivot portion (88) for pivoting of the contact portion (28') relative to the resilient arm portion (32'+82+84+86) (see marked-up below).



In regards to claim 2 and 41, Grabbe discloses the connector wherein the resilient arm portion (32'+82+84+86) is operable to deflect about the first pivot portion (A) during movement of the contact portion (28') in a first direction up to a first deflection position, and the contact portion (28') is operable to deflect about the second pivot portion (88) during further movement of the contact portion (28') in the first direction beyond the first deflection position.

In regards to claim 3, Grabbe discloses the connector wherein the first pivot portion (A) connects the resilient arm portion (32'+82+84+86) to the support portion (24'), the first pivot portion (A) resiliently resists deflection of the resilient arm portion (32'+82+84+86) if a force is applied to the contact portion (28').

In regards to claims 5 and 20, Grabbe discloses the contact portion (28') comprises a bent segment having an arched portion/acute (see marked-up above).

In regards to claim 6, Grabbe discloses the connector wherein the terminal (20') further comprises the first pivot portion (A), disposed between the resilient arm portion (32'+82+84+86) and the support portion (24') (see marked-up above).

In regards to claim 7, Grabbe discloses the connector wherein the first pivot portion (A) is formed integrally with the resilient arm portion (32'+82+84+86) and the support portion (24').

In regards to claim 8, Grabbe discloses the connector wherein the first pivot portion (A) comprises a resilient connecting portion (adjacent to A) connecting the resilient arm portion (32'+82+84+86) and the support portion (24').

In regards to claim 9, Grabbe discloses the connector wherein the first pivot portion (A) comprises a bend (adjacent to A) joining the resilient arm portion (32'+82+84+86) and the support portion (24').

In regards to claim 11, Grabbe discloses the connector wherein the second pivot portion (88) comprises a protuberance (protrusion on 88) disposed on at least one of the terminal (20') (fig. 4).

In regards to claim 12, Grabbe discloses the connector wherein the protuberance (protrusion on 88) of a terminal arrangement (of 20') has a rounded surface (fig. 4).

In regards to claim 13, Grabbe discloses the connector wherein the protuberance (protrusion on 88) of a terminal arrangement (of 20') has a flat (side) surface (fig. 4).

In regards to claim 14, Grabbe discloses the connector wherein the protuberance (protrusion on 88) of a terminal arrangement (of 20') is solid (thickness) (fig. 4).

Art Unit: 2833

In regards to claim 15, Grabbe discloses the connector wherein the or each protuberance (protrusion on 88) of a terminal arrangement (of 20') has hollow (fig. 4).

In regards to claim 16, Grabbe discloses the connector wherein the terminal (20') further comprises the second pivot portion (88), disposed between the resilient arm portion (32'+82+84+86) and the contact portion (28').

In regards to claim 17, Grabbe discloses the connector wherein the second pivot portion (88) is formed integrally with the resilient arm portion (32'+82+84+86) (marked-up above).

In regards to claim 18, Grabbe discloses the connector wherein the second pivot portion (88) extends from a surface of the resilient arm portion (32'+82+84+86) facing the support portion (24').

In regards to claim 19, Grabbe discloses the connector claim 16, wherein the second pivot portion (88) comprises a bent portion (curve portion) of the resilient arm portion (32'+82+84+86).

In regards to claim 21, Grabbe discloses the connector wherein the second pivot portion (88) is operable to pivot against the support portion (24').

In regards to claim 22, Grabbe discloses the connector wherein the second pivot portion (88) is disposed on the housing (18').

In regards to claim 23, Grabbe discloses the connector wherein the resilient arm portion (32'+82+84+86) is disposed at an angle with respect to the support portion (24') (fig. 4).

In regards to claim 25, Grabbe discloses the connector wherein the connector terminal (20') is formed of an electrically conductive material.

In regards to claim 26, Grabbe discloses the connector wherein the connector housing (18') is formed of an electrically insulating material.

In regards to claim 28, Grabbe discloses the connector wherein the connector housing (18') comprises one or more cavities (spaces, where 20' located), with individual ones of the connector terminal arrangements (of 20') arranged in individual ones of the cavities (spaces, where 20' located) (figs. 1 and 5).

In regards to claim 29, Grabbe discloses the connector further comprising separating walls (at the spaces) between adjacent cavities (spaces where each 20' located).

In regards to claim 31, Grabbe discloses the connector wherein the support arm portion (24') further comprises a tail portion (93) extending from a free end of the support arm portion (24'), to contact second electrical point (4, 96)(fig.1).

In regards to claim 32, Grabbe discloses the connector wherein the connector housing (18') comprises one or more cavities (spaces), with individual ones of the connector terminal arrangements (of 20') arranged in individual ones of the cavities (spaces where 20'), wherein the contact portions (28') and the tail portions (93) of the terminal (20') protrude from individual cavities (spaces)(figs. 1 and 4).

In regards to claim 33, Grabbe discloses the connector wherein the tail portion (93) comprises a first free end of the terminal (20') (see marked-up above).

In regards to claim 34, Grabbe discloses the connector wherein the contact portion (28') comprises a second free end of the terminal (20') (fig. 4).

Art Unit: 2833

In regards to claim 36, Grabbe discloses the assembly comprising a first circuit (on 9); a second circuit (on 14); and an electrical connector (of housing 18') for electrically connecting the first circuit (on 9') to the second circuit (on 14) (figs. 1 and 5).

In regards to claim 37, Grabbe discloses the assembly wherein the connector (of housing 18') is mounted to connect the first (on 9) and second circuits (on 14) electrically; the first circuit (on 9) comprises one or more first electrical points (2) with which the one or more contact portions (of 2) are in contact; the second circuit (on 14) comprises one or more second electrical points (4, 96) with which the one or more support portions (12) are in contact (figs. 1 and 5).

In regards to claim 38, Grabbe discloses the assembly wherein the one or more resilient arm portions (32') are pivoted about the respective first pivot portions (A); and the one or more contact portions (28') are pivoted about the respective second pivot portions (88) (see marked-up above).

In regards to claim 39, Grabbe discloses the assembly wherein the first circuit (on 9') is a printed circuit board (9').

In regards to claim 42, Grabbe discloses the assembly wherein the method further comprising mounting the connector (of 18') to the second circuit (on 14) prior moving the first circuit (on 9') against the biasing force.

In regards to claim 43, Grabbe discloses the assembly wherein the method further comprising mounting the first circuit (on 9') to the connector (of 18').

In regards to claim 44, Grabbe discloses the assembly wherein the method wherein mounting the first circuit (on 9') to the connector (of 18') comprises moving the first circuit (on 9') against the biasing force.

In regards to claim 45, Grabbe discloses the connector wherein moving the first circuit (on 9') against the biasing force is achieved by screwing (74') the first circuit (on 9') down.

4. Claims 1-10, 16-17, 19-28, 31-34, 36-39 and 41-44 are rejected under 35 U.S.C. 102(b) as being anticipated by WO03/049517.

In regards to claim 1, WO03/049517 discloses an electrical connector comprising:

a connector housing (3); and

at least one deformable connector terminal arrangement (of 1) disposed at the connector housing (3), the connector

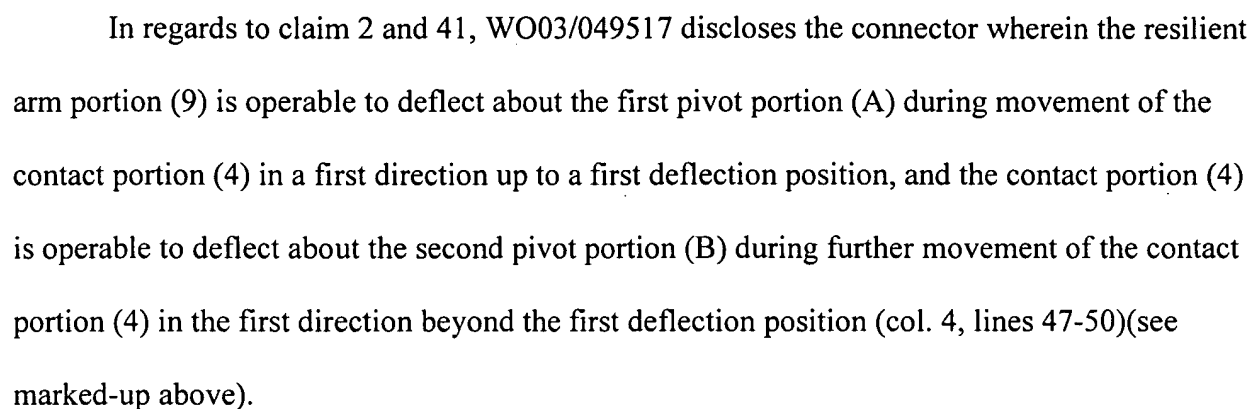
terminal arrangement (of 1) comprising:

a terminal (1) (figs. 1-3) comprising a movable resilient arm portion (9), a contact portion (4) at one end of the resilient arm portion (9) for connecting to a first electrical point (of the first mating connector) and a support portion (8) connected to another end of the resilient arm portion (9) and for connecting to a second electrical point (of the second mating connector);

wherein the support portion (8) is seated in the connector housing (3), and the terminal (1) further comprises a contact tail portion (5) extending from the support portion (8) out of the housing (3);

a first pivot portion (A) for pivoting of the resilient arm portion (9) relative to the support portion (8); and

a second pivot portion (B) (fig. 2) for pivoting of the contact portion (4) relative to the resilient arm portion (9) (see marked-up below).



In regards to claim 4, WO03/049517 discloses the connector wherein the resilient arm portion (9) and the support portion (8) are elongate (figs. 1-4).

In regards to claims 5 and 20, WO03/049517 discloses the connector wherein the contact portion (4) comprises a bent segment having an arched portion for contacting the first electrical point (of the first mating device) (fig. 1).

In regards to claim 6, WO03/049517 discloses the connector wherein the terminal (1) further comprises the first pivot portion (A), disposed between the resilient arm portion (9) and the support portion (8) (see marked-up above).

In regards to claim 7, WO03/049517 discloses the connector wherein the first pivot portion (A) is formed integrally with the resilient arm portion (9) and the support portion (8).

In regards to claim 8, WO03/049517 discloses the connector wherein the first pivot portion (A) comprises a resilient connecting portion (C) connecting the resilient arm portion (9) and the support portion (8).

In regards to claim 9, WO03/049517 discloses the connector wherein the first pivot portion (A) comprises a bend (at A) joining the resilient arm portion (9) and the support portion (8).

In regards to claim 10, WO03/049517 further discloses the connector wherein the first pivot portion (A) comprises a U-shaped segment joining the resilient arm portion (9) and the support portion (8), the resilient arm portion (9) being substantially superposed over the support portion (8).

In regards to claim 16, WO03/049517 discloses the connector wherein the terminal (1) further comprises the second pivot portion (B), disposed between the resilient arm portion (9) and the contact portion (4)(fig. 2):

In regards to claim 17, WO03/049517 discloses the connector wherein the second pivot portion (B) is formed integrally with the resilient arm portion (9) (marked-up above).

In regards to claim 19, WO03/049517 discloses the connector wherein the second pivot portion (B) comprises a bent portion (at B) of the resilient arm portion (9)(fig. 2).

In regards to claim 21, WO03/049517 discloses the connector wherein the second pivot portion (B) is operable to pivot against the support portion (8)(fig.5).

In regards to claim 22, WO03/049517h discloses the connector wherein the connector wherein the second pivot portion (B) is disposed on the housing (3).

In regards to claim 23, WO03/049517 discloses the connector wherein the resilient arm portion (9) is disposed at an angle with respect to the support portion (8) (fig. 1).

In regards to claim 24, WO03/049517 discloses the connector wherein the connector wherein (a portion of) the resilient arm portion (9) is substantially parallel to the support portion (8)(fig. 1).

In regards to claim 25, WO03/049517 discloses the connector wherein the connector terminal (1) is formed of an electrically conductive material (col. 4, line 14).

In regards to claim 26, WO03/049517 discloses the connector wherein the connector housing (3) is formed of an electrically insulating material (it is inherent).

In regards to claim 27, WO03/049517 discloses the connector wherein the terminal (1) is elongate, with the contact portion (4) at an opposite end from the support portion (8) (fig. 1).

In regards to claim 28, WO03/049517 discloses the connector wherein the connector housing (3) comprises one cavity (3), with individual connector terminal arrangement arranged in individual cavity (3).

In regards to claim 31, WO03/049517 discloses the connector wherein a tail portion (5) extending from a free end of the support arm portion (8), to contact the second electrical point (of the second mating device).

In regards to claim 32, in view of claim 28, WO03/049517h further discloses the connector wherein the contact portions (4) and the tail portions (5) of the terminal (1) protrude from individual cavity (2) (fig. 1).

In regards to claim 33, WO03/049517 discloses the connector wherein the tail portion (5) comprises a first free end of the terminal (1).

In regards to claim 34, WO03/049517 discloses the connector wherein the contact portion (4) comprises a second free end of the terminal (1) (fig. 1).

In regards to claim 36, WO03/049517 discloses the assembly comprising a first circuit (device); a second circuit (device); and an electrical connector (terminal 1) for electrically connecting the first circuit (device) to the second circuit (device) (col. 62-65).

In regards to claim 37, WO03/049517 discloses the assembly wherein the connector (terminal 1) is mounted to connect the first and second circuits (devices) electrically; the first circuit (device) comprises a first electrical points (on the first device) with which the contact portion (4) is in contact; the second circuit (device) comprises a second electrical points (on the second device) with which the support portion (8) is in contact (at 5).

In regards to claim 38, WO03/049517 discloses the assembly wherein the resilient arm portions (9) is pivoted about the respective first pivot portions (A); and the contact portions (4) are pivoted about the respective second pivot portions (B) (see marked-up above).

In regards to claim 39, WO03/049517 discloses the assembly wherein the first circuit (device) is a printed circuit board (page 4, lines 30-32).

In regards to claim 42, WO03/049517 discloses the assembly wherein the method further comprising mounting the connector (terminal 1) to the second circuit (device) prior moving the first circuit (device) against the biasing force.

In regards to claim 43, WO03/049517 discloses the assembly wherein the method further comprising mounting the first circuit (device) to the connector (terminal 1).

In regards to claim 44, WO03/049517 discloses the assembly wherein the method wherein mounting the first circuit (device) to the connector (terminal 1) comprises moving the first circuit (device) against the biasing force.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO03/049517 in view of Ma (US6814587B2).

In regards to claim 30, WO03/049517 individual cavities (2) are defined by a roof portion (12) with the resilient arm portion (9) and the support portion (8) of a connector terminal arrangement disposed within the cavities (2)(figs. 4-5). WO03/049517 discloses the invention generally as claimed, but lacks the roof portion spaced apart from the based portion. However, Ma teaches individual cavities (103) are defined by a roof portion (1037) spaced apart from a base portion (1038), with the resilient arm portion (206) and the support portion (201) of a connector terminal arrangement disposed within the cavities (103)(figs 3-4). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the

connector of WO03/049517 by having a roof portion as taught by Ma for preventing over bending of the contact terminals out of the cavity into the neighbor cavities when the connector been not used.

7. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe (US4268102) in view of Eldrige et al (US6888362B2).

In regards to claim 35, Grube discloses the invention generally as claimed, but lacks the mounting pin. However, Eldrige et al teach the mounting pin (1855) for mounting the housing (having 1834) in the assembly (fig. 18). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube with the mounting pin as taught by Eldrige et al for securing the connector housing and contact terminals to the printed circuit boards.

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe (US4268102) in view of Neidich et al (US6672879B2).

In regards to claim 40, Grabbe discloses the invention generally as claimed, but lacks the flex circuit. However, Neidich et al teach the second circuit to be a flex circuit (15) (fig. 1a). It would have been obvious to one having ordinary skill at the time the invention was made to replace one of printed circuit board of Grabbe by having a flex circuit as taught by Neidich et al for increasing the contact terminals and the contact pads between the printed circuit board and the flexible circuit.

9. The indicated allowability of claims 10 and 24 are withdrawn in view of the newly discovered reference(s) to Grabbe (US4268102). Rejections based on the newly cited reference(s) follow.

Art Unit: 2833

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Geib (US4761140) is cited to show the protuberance on the housing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchi Nguyen whose telephone number is (571) 272-2012. The examiner can normally be reached on 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (571) 272-2800 ext 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PCN

March 22, 2007


TULSIDAS C. PATEL
SUPERVISORY PATENT EXAMINER